RF Test Report

FCC ID: 2BCKS-PR02

Report No.	:	TBR-C-202308-0074-33
Applicant	:	Shenzhen iPeace Entity Co. Ltd
Equipment Under Test (EUT)		
EUT Name	:	UHF RFID READER WRITER
Model No.	:	PR02
Serial Model No.	:	PR01, PR03, PR04
Brand Name	:	KUMEAI
Sample ID	:	HC-C-202308-0074-01-01-1#& HC-C-202308-0074-01-01-2#
Receipt Date	:	2023-08-22
Test Date	:	2023-08-22 to 2023-09-25
Issue Date	:	2023-09-25
Standards	:	FCC Part 15, Subpart C 15.249
Test Method	:	ANSI C63.10:2013
Conclusions	:	**PASS**

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC requirements

Test/Witness Engineer	:	Wade. LV
Engineer Supervisor	:	IVAN SU
Engineer Manager	:	Ray Lai.

Wade. LV

Ivan Su

Ray Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Contents

Revision History

Report No.	Version	Description	Issued Date
TBR-C-202308-0074-33	Rev.01	Initial issue of report	2023-09-25

1. General Information about EUT

1.1 Client Information

Applicant	:	Shenzhen iPeace Entity Co. Ltd
Address	:	702, Tower 3, Laizuoshan, BuJi, Longgang District, Shenzhen, China.
Manufacturer	:	Shenzhen iPeace Entity Co. Ltd
Address	:	702, Tower 3, Laizuoshan, BuJi, Longgang District, Shenzhen, China.

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	UHF RFID READER WRITER	
Model(s)	:	PR02, PR01, PR03, PR04	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is Appearance and Model name.	
Product Description	:	Operation Frequency: 902.25MHz~909.25MHz	
		Number of Channel:	8 Channel
		Out Power:	74.65dBuV/m@3m Peak
		Antenna Gain:	3.5dBi Ceramic Antenna
		Modulation Type:	FSK
Power Rating	:	Input: DC 5V DC 3.7V/3.8V by 10000mAh Rechargeable Li-ion battery	
Software Version	:	V1.0	
Hardware Version	:	----	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

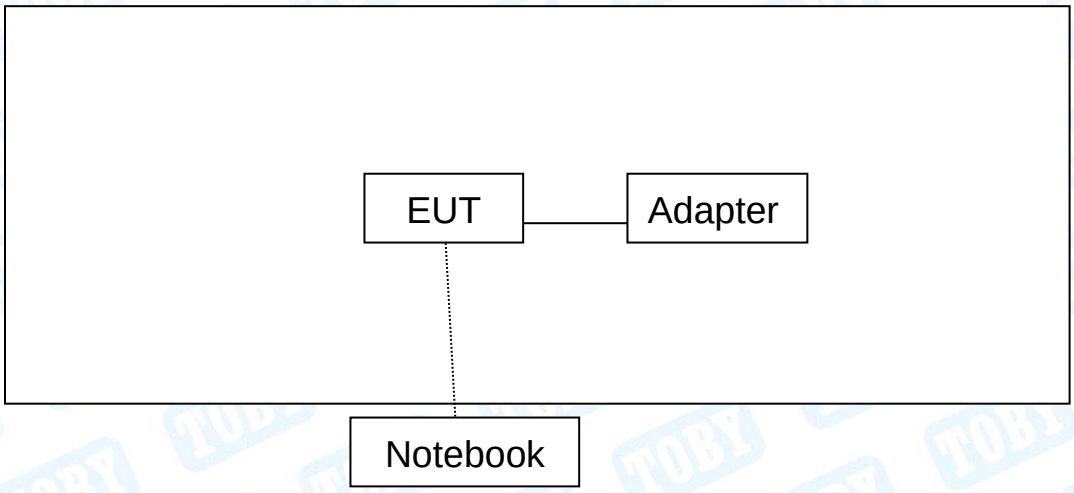
Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List:

Channel	Frequency (MHz)
01	**902.25**
02	903.25
03	904.25
04	**905.25**
05	906.25
06	907.25
07	908.25
08	**909.25**

1.3 Block Diagram Showing the Configuration of System Tested



1.4 Description of Support Units

Equipment Information				
Name	**Model**	**FCC ID/SDOC**	**Manufacturer**	**Used "√"**
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Cable Information				
Number	**Shielded Type**	**Ferrite Core**	**Length**	**Note**
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1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test(AC POWER)	
Final Test Mode	**Description**
Mode 1	TX Mode
For Radiated and RF Conducted Test	
Final Test Mode	**Description**
Mode 2	TX Mode
Mode 3	TX FSK Mode (Channel 01/04/08)

Note:

For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

(1) According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels.

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT is considered a Mobile unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel & Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF mode.

Test Software Version	**RFID_Reader_Csharp**		
Frequency	902.25MHz	905.25MHz	909.25MHz
FSK	4.8	4.8	4.8

1.7 Measurement Uncertainty

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %.

Test Item	**Parameters**	**Expanded Uncertainty (U_{Lab})**
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	 ±3.42 dB ±3.42 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB

1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.

2. Test Summary

FCC Part 15 Subpart C(15.249)				
Standard Section FCC	Test Item	Test Sample(s)	Judgment	Remark
15.203	Antenna Requirement	HC-C-202308-0074-01-01-2#	PASS	N/A
15.205	Restricted Bands	HC-C-202308-0074-01-01-1#	PASS	N/A
15.207	AC Power Conducted Emission	HC-C-202308-0074-01-01-1#	PASS	N/A
15.249 &15.209	Radiated Spurious Emission	HC-C-202308-0074-01-01-2#	PASS	N/A
15.215(C)	20dB Bandwidth	HC-C-202308-0074-01-01-2#	PASS	N/A
Note: N/A is an abbreviation for Not Applicable.				

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
RF Conducted Measurement	MTS-8310	MWRFtest	V2.0.0.0
RF Test System	JS1120-3	Tonscend	V3.2.22

4. Test Equipment

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jun. 20, 2023	Jun. 19, 2024
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jun. 20, 2023	Jun. 19, 2024
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jun. 20, 2023	Jun. 19, 2024
LISN	Rohde & Schwarz	ENV216	101131	Jun. 20, 2023	Jun. 19, 2024
ISN	SCHWARZBECK	NTFM 8131	8131-193	Jun. 20, 2023	Jun. 19, 2024
ISN	SCHWARZBECK	CAT3 8158	cat3 5158-0094	Jun. 20, 2023	Jun. 19, 2024
ISN	SCHWARZBECK	NTFM5158	NTFM5158 0145	Jun. 06, 2023	Jun. 05, 2024
ISN	SCHWARZBECK	CAT 8158	cat5 8158-179	Jun. 20, 2023	Jun. 19, 2024
Radiation Emission Test (B Site)					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 30, 2023	Aug. 29, 2024
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 20, 2023	Jun. 19, 2024
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Feb. 23, 2023	Feb.22, 2024
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Dec. 05, 2021	Dec. 04, 2023
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	Feb. 26, 2022	Feb.25, 2024
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Jun. 26, 2022	Jun.25, 2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 26, 2022	Jun.25, 2024
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 30, 2023	Aug. 29, 2024
Highpass Filter	CD	HPM-6.4/18G	---	N/A	N/A
Highpass Filter	CD	HPM-2.8/18G	---	N/A	N/A
Highpass Filter	XINBO	XBLBQ-HTA67(8-25G)	22052702-1	N/A	N/A
Antenna Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jun. 20, 2023	Jun. 19, 2024
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 20, 2023	Jun. 19, 2024
MXA Signal Analyzer	KEYSIGHT	N9020B	MY60110172	Aug. 30, 2023	Aug. 29, 2024
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Aug. 30, 2023	Aug. 29, 2024

Vector Signal Generator	Agilent	N5182A	MY50141294	Aug. 30, 2023	Aug. 29, 2024
Analog Signal Generator	Agilent	N5181A	MY48180463	Aug. 30, 2023	Aug. 29, 2024
Vector Signal Generator	KEYSIGHT	N5182B	MY59101429	Aug. 30, 2023	Aug. 29, 2024
Analog Signal Generator	KEYSIGHT	N5173B	MY61252685	Aug. 30, 2023	Aug. 29, 2024
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Aug. 30, 2023	Aug. 29, 2024
RF Control Unit	Tonsced	JS0806-1	21C8060380	N/A	N/A
RF Control Unit	Tonsced	JS0806-2	21F8060439	Aug. 30, 2023	Aug. 29, 2024
Power Control Box	Tonsced	JS0806-4ADC	21C8060387	N/A	N/A
Wideband Radio Comunication Tester	Rohde & Schwarz	CMW500	144382	Aug. 30, 2023	Aug. 29, 2024
Universal Radio Communication Tester	Rohde&Schwarz	CMW500	168796	Feb. 23, 2023	Feb.22, 2024
Temperature and Humidity Chamber	ZhengHang	ZH-QTH-1500	ZH2107264	Jun. 20, 2023	Jun. 19, 2024

5. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard

FCC Part 15.207

4.1.2 Test Limit

Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

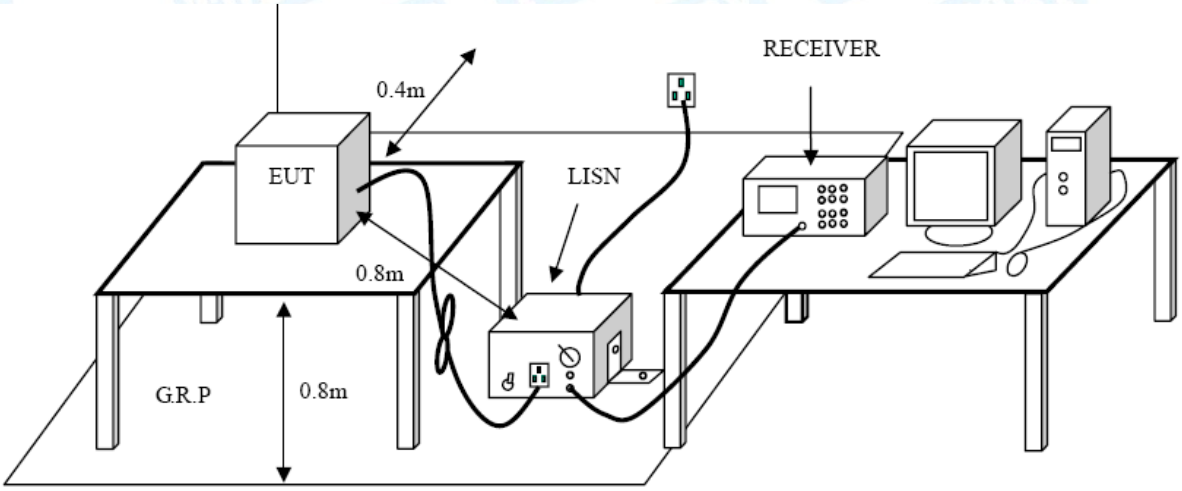
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back

and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN is at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please refer to the Attachment A.

6. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

FCC Part 15.209

5.1.2 Test Limit

Radiated Emission Limit (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

Frequency (MHz)	Distance Meters (at 3m)	
	Peak	Average
Above 1000	74	54

Note:

(1) The tighter limit applies at the band edges.

(2) Emission Level(dBuV/m)=20log Emission Level(Uv/m)

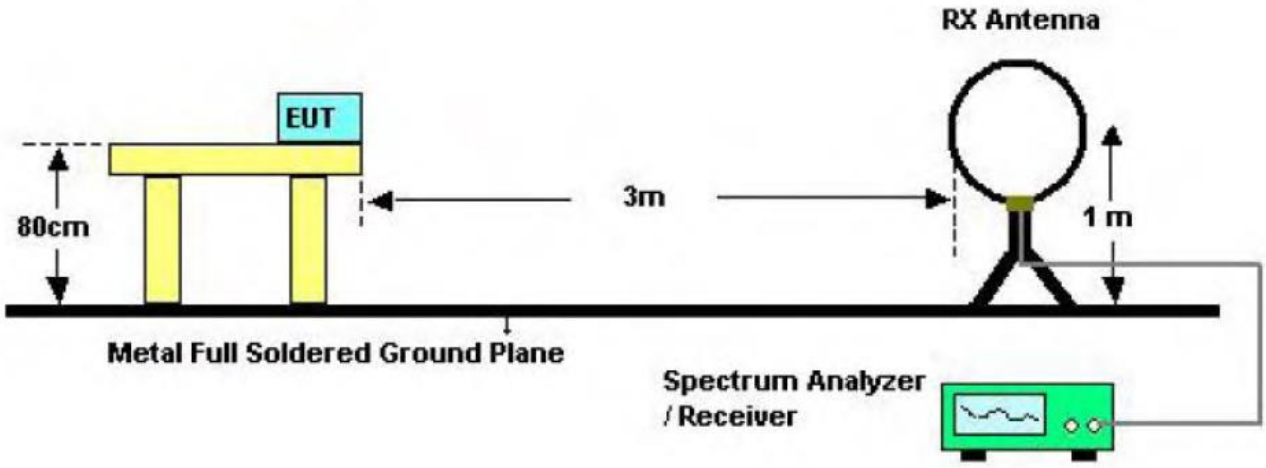
Limits of radiated emission measurement (15.249)

FCC Part 15 (15.249), Subpart C	
Limit	**Frequency Range (MHz)**
Field strength of fundamental 50000 μV/m (94 dBμV/m) @ 3 m	902~928
Field strength of fundamental 500 μV/m (54 dBμV/m) @ 3 m	Below 902 and Above 928

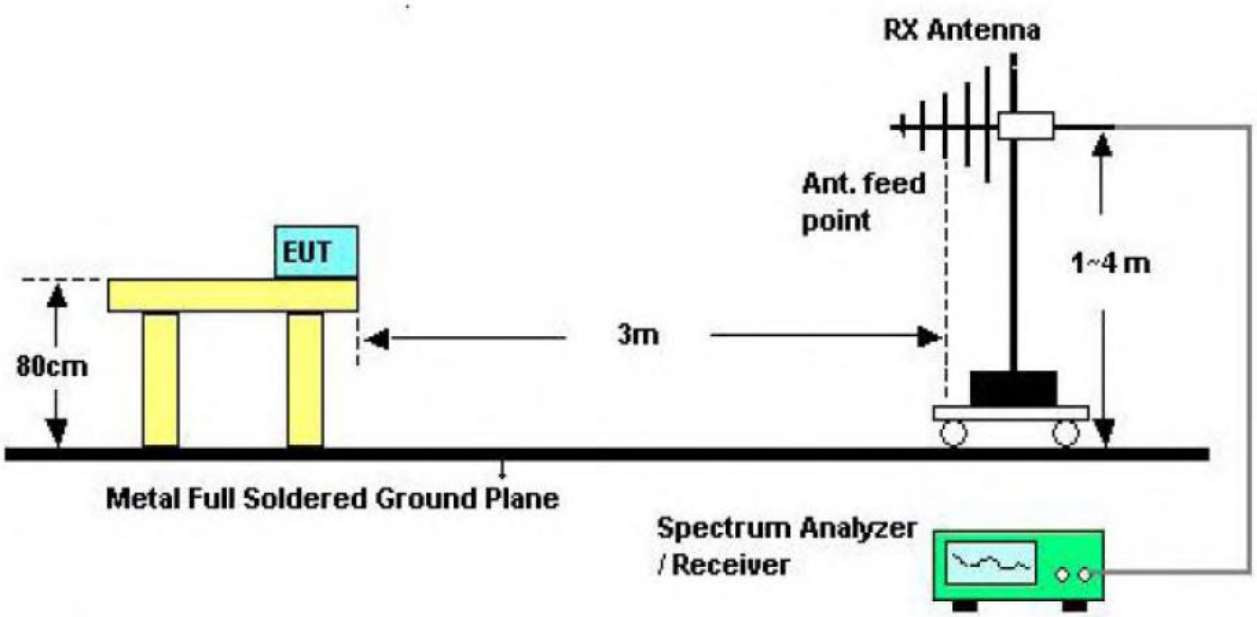
Restricted bands requirement for equipment operating in 902MHz to 928 MHz (15.249)

Restricted Frequency Band (MHz)	(dBuV/m)(at 3 M)
902~928	Attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation

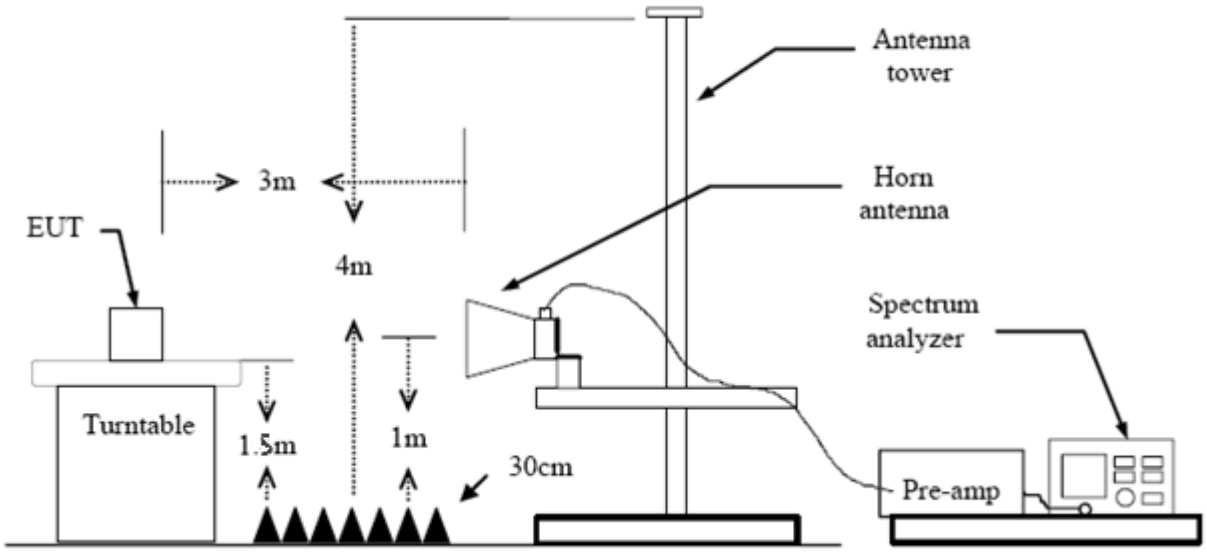
5.2 Test Setup



Below 30MHz Test Setup



Bellow 1000MHz Test Setup



Above 1GHz Test Setup

5.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency Below 1GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.

(2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

(3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

(4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

(5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

(6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.

(7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

(8) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

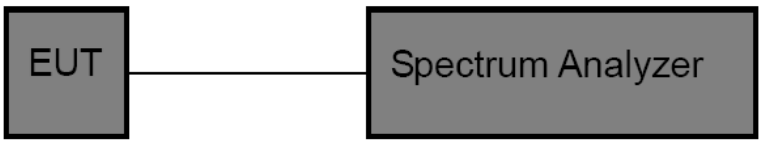
The EUT was set to Continual Transmitting in maximum power, and new batteries are used during testing.

5.5 Test Data

Please refer to the Attachment B.

7. Bandwidth Test

6.1 Test Setup



6.2 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

(2) Spectrum Setting:

Bandwidth: RBW=100 kHz, VBW=300kHz.

(3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.

6.3 EUT Operating Condition

The EUT was set to continuously transmitting for the Bandwidth Test.

6.4 Test Data

Please refer to the Attachment C.

8. Antenna Requirement

7.1 Standard Requirement

7.1.1 Standard

FCC Part 15.203

7.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

7.2 Antenna Connected Construction

The gains of the antenna used for transmitting is 3.5dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

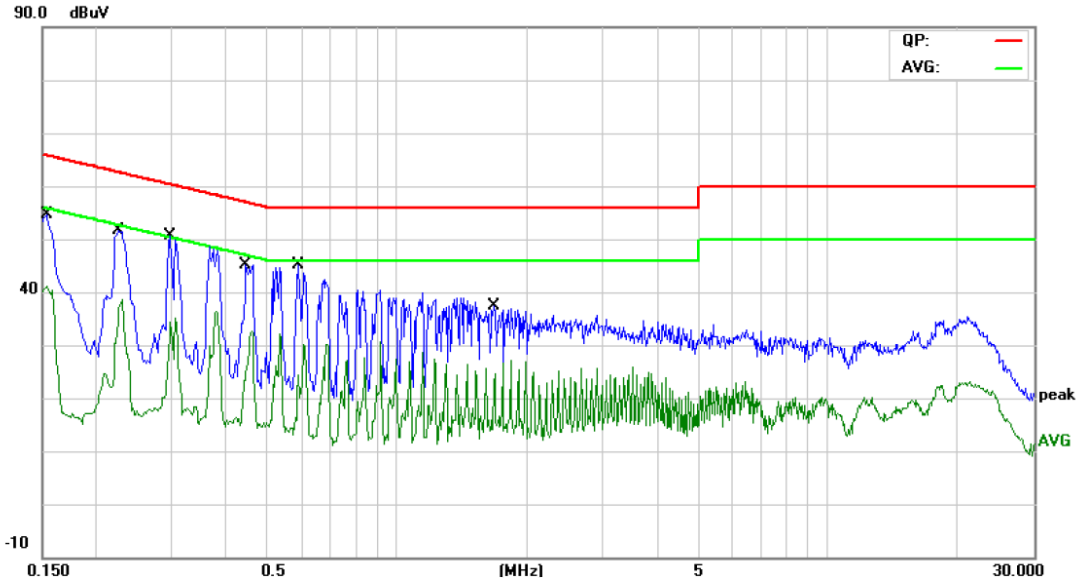
7.3 Result

The EUT antenna is Ceramic Antenna. It complies with the standard requirement.

Antenna Type
☒Permanent attached antenna
☐Unique connector antenna
☐Professional installation antenna

Attachment A-- Conducted Emission Test Data

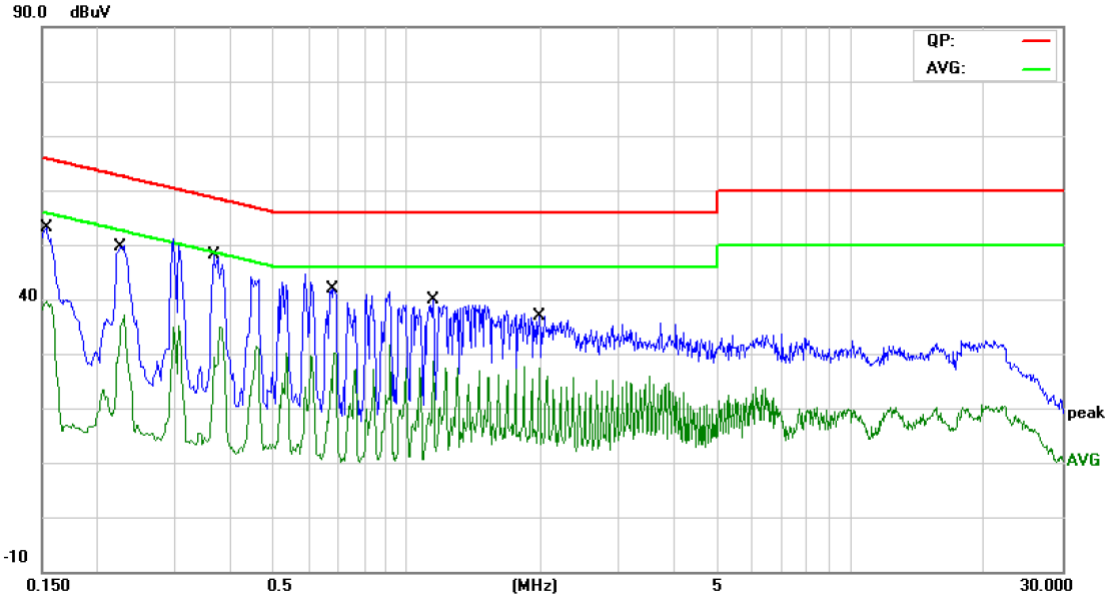
Temperature:	23.5℃	**Relative Humidity:**	49%
Test Voltage:	AC 120V/60Hz		
Terminal:	Line		
Test Mode:	Mode 1		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1539	40.71	11.19	51.90	65.78	-13.88	QP
2		0.1539	26.97	11.19	38.16	55.78	-17.62	AVG
3		0.2260	29.74	11.21	40.95	62.59	-21.64	QP
4		0.2260	18.14	11.21	29.35	52.59	-23.24	AVG
5		0.2980	28.06	11.35	39.41	60.30	-20.89	QP
6		0.2980	10.43	11.35	21.78	50.30	-28.52	AVG
7		0.4460	24.15	10.98	35.13	56.95	-21.82	QP
8		0.4460	9.32	10.98	20.30	46.95	-26.65	AVG
9		0.5899	24.30	11.10	35.40	56.00	-20.60	QP
10		0.5899	5.41	11.10	16.51	46.00	-29.49	AVG
11		1.6780	18.76	10.64	29.40	56.00	-26.60	QP
12		1.6780	5.87	10.64	16.51	46.00	-29.49	AVG

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

Temperature:	23.5℃	**Relative Humidity:**	49%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	Mode 1		
Remark:	Only worse case is reported.		



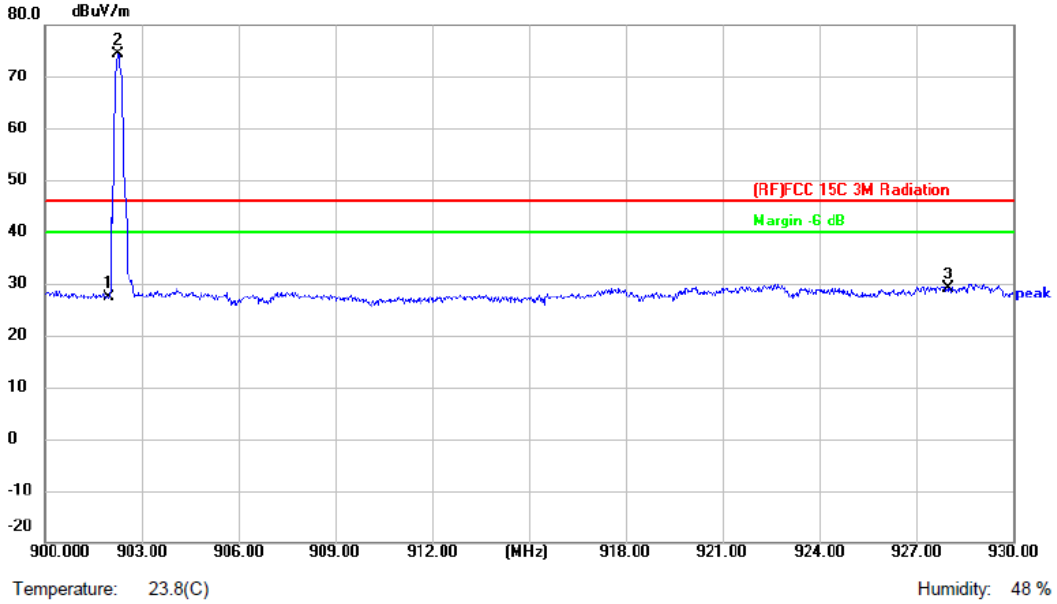
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1539	40.41	11.19	51.60	65.78	-14.18	QP
2		0.1539	26.71	11.19	37.90	55.78	-17.88	AVG
3		0.2260	29.16	11.21	40.37	62.59	-22.22	QP
4		0.2260	17.54	11.21	28.75	52.59	-23.84	AVG
5		0.3660	25.94	11.17	37.11	58.59	-21.48	QP
6		0.3660	6.17	11.17	17.34	48.59	-31.25	AVG
7		0.6820	22.76	11.36	34.12	56.00	-21.88	QP
8		0.6820	9.30	11.36	20.66	46.00	-25.34	AVG
9		1.1460	23.27	10.86	34.13	56.00	-21.87	QP
10		1.1460	11.61	10.86	22.47	46.00	-23.53	AVG
11		1.9860	19.08	10.52	29.60	56.00	-26.40	QP
12		1.9860	8.23	10.52	18.75	46.00	-27.25	AVG

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

Attachment B-- Radiated Emission Test Data

Field Strength of the Fundamental

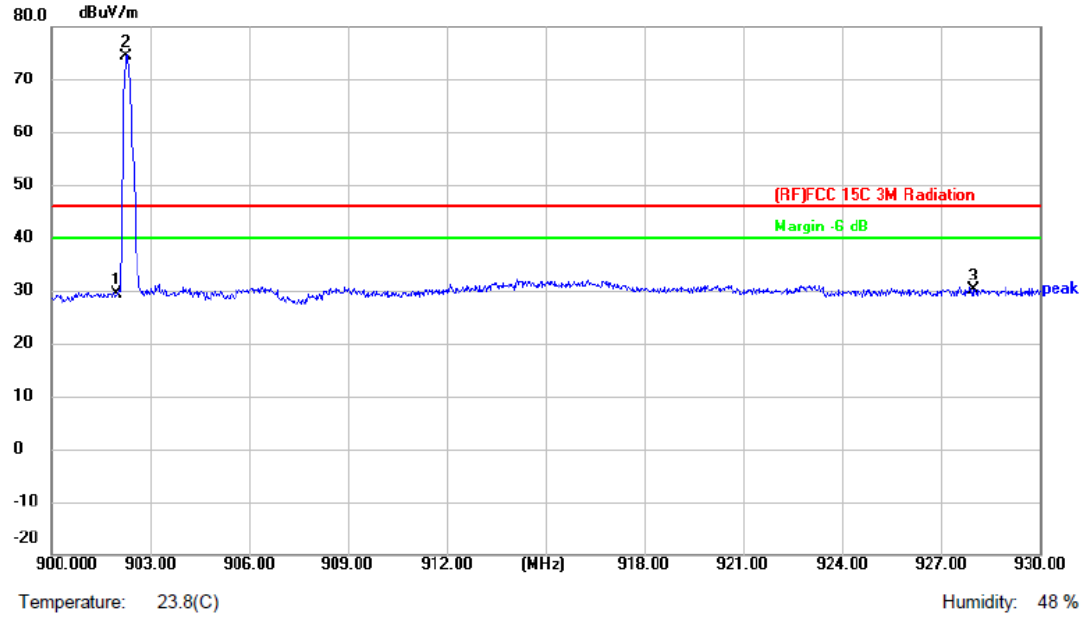
Temperature:	23.8℃	**Relative Humidity:**	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 902.25MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	34.98	-7.52	27.46	46.00	-18.54	peak
2 *	902.2500	81.85	-7.51	74.34	**94.00**	**-19.66**	**QP**
3	928.0000	36.25	-7.07	29.18	46.00	-16.82	peak

Emission Level= Read Level+ Correct Factor

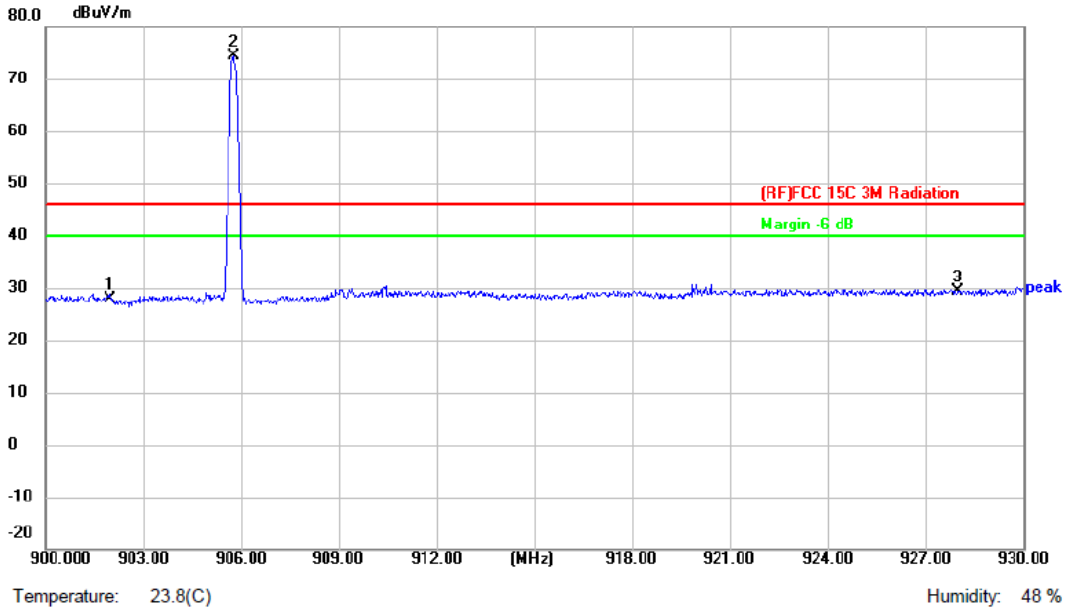
Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 902.25MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	36.87	-7.52	29.35	46.00	-16.65	peak
2 *	902.2500	81.81	-7.51	74.30	**94.00**	**-19.70**	**QP**
3	928.0000	37.11	-7.07	30.04	46.00	-15.96	peak

Emission Level= Read Level+ Correct Factor

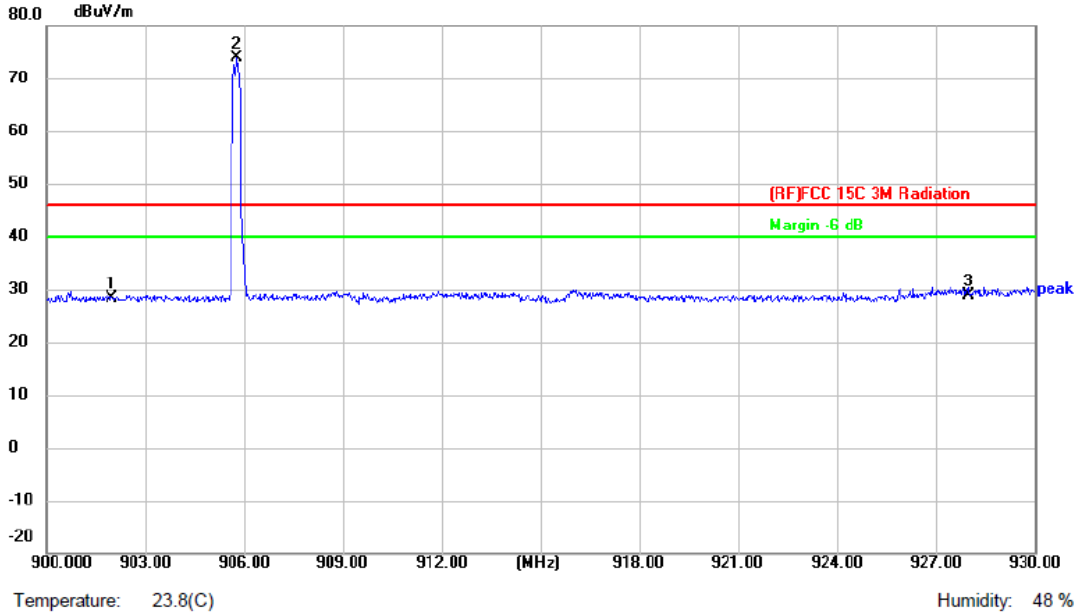
Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 905.25MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	35.39	-7.52	27.87	46.00	-18.13	peak
2 *	905.7600	81.96	-7.46	74.50	**94.00**	**-19.50**	**QP**
3	928.0000	36.54	-7.07	29.47	46.00	-16.53	peak

Emission Level= Read Level+ Correct Factor

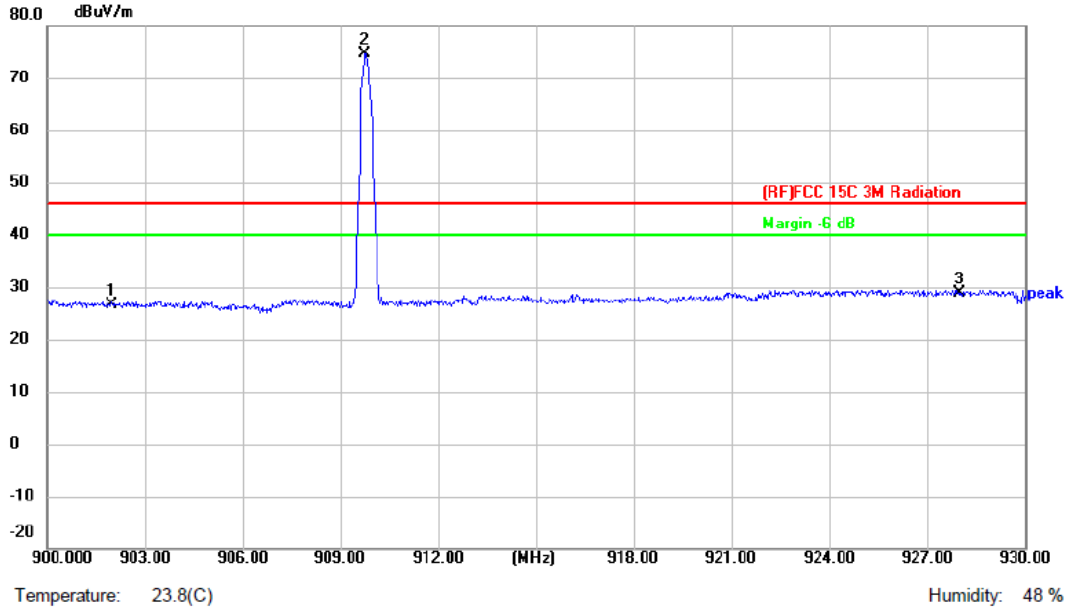
Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 905.25MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	35.83	-7.52	28.31	46.00	-17.69	peak
2 *	905.7600	81.32	-7.46	73.86	**94.00**	**-20.14**	**QP**
3	928.0000	36.01	-7.07	28.94	46.00	-17.06	peak

Emission Level= Read Level+ Correct Factor

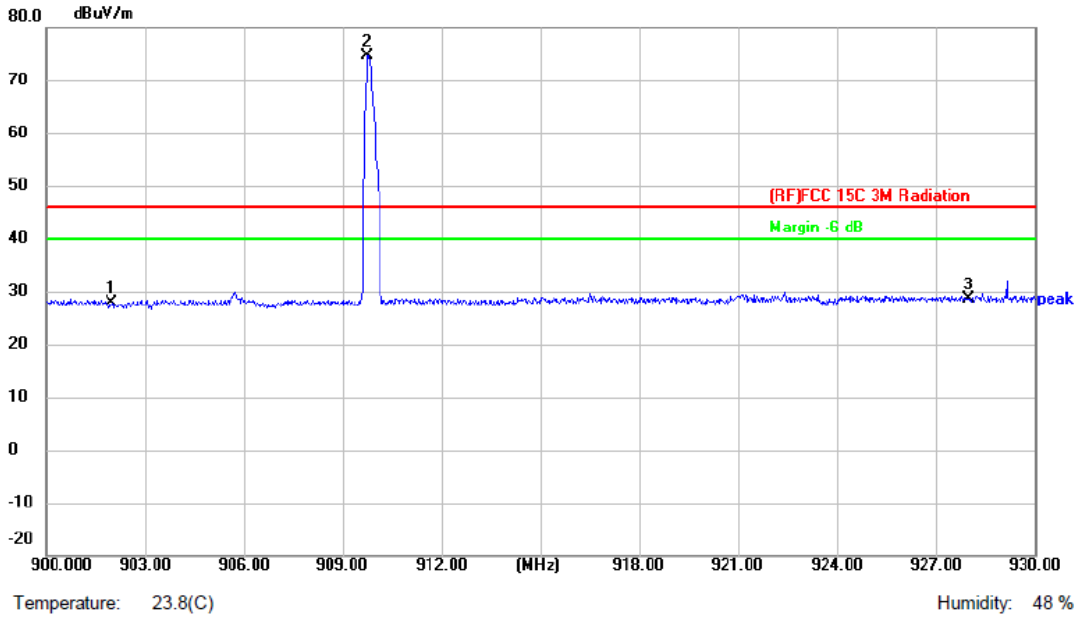
Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 909.25MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	34.17	-7.52	26.65	46.00	-19.35	peak
2 *	909.7500	82.04	-7.39	74.65	**94.00**	**-19.35**	**QP**
3	928.0000	36.00	-7.07	28.93	46.00	-17.07	peak

Emission Level= Read Level+ Correct Factor

Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 909.25MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	35.40	-7.52	27.88	46.00	-18.12	peak
2 *	909.7500	82.00	-7.39	74.61	**94.00**	**-19.39**	**QP**
3	928.0000	35.78	-7.07	28.71	46.00	-17.29	peak

Emission Level= Read Level+ Correct Factor

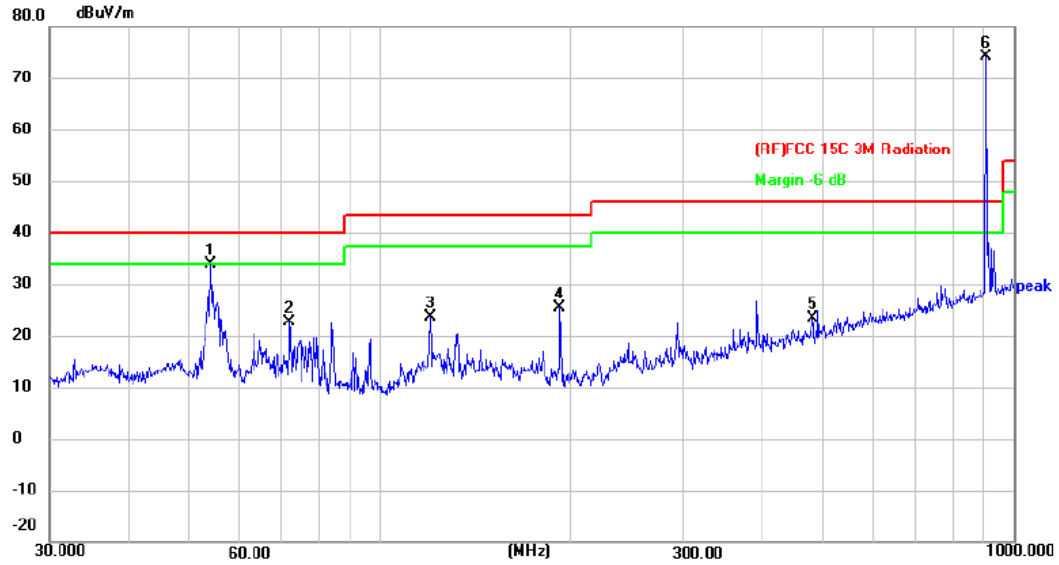
Radiated Spurious Emission (9 KHz~30 MHz)

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Radiated Spurious Emission (Below 1 GHz)

Temperature:	23.8℃	**Relative Humidity:**	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 902.25MHz		
Remark:	Only worse case is reported		

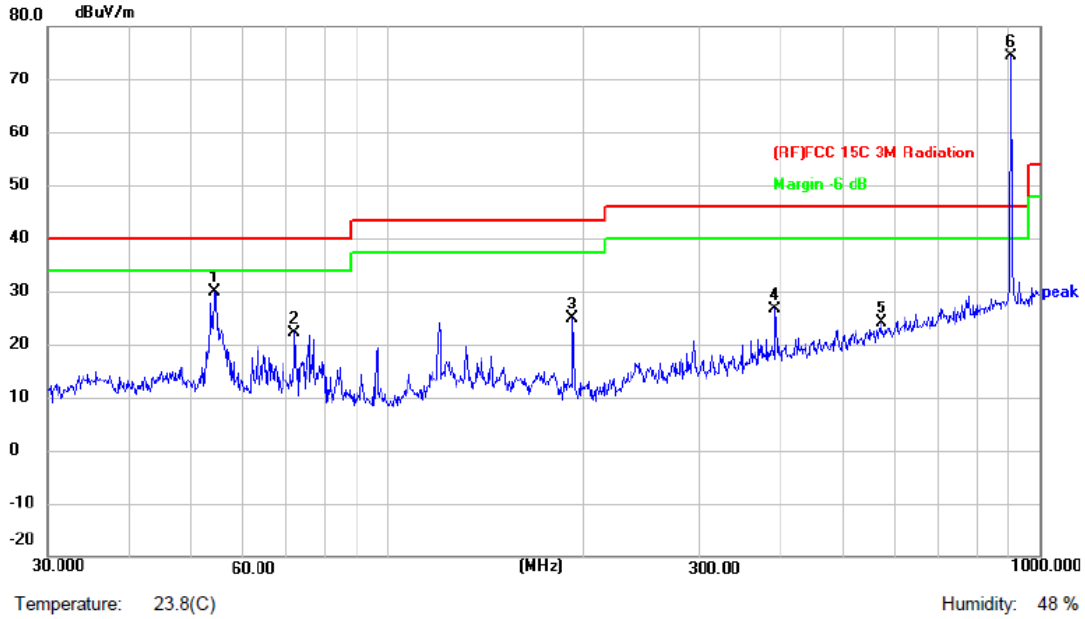


Temperature: 23.8(C) Humidity: 48 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	53.8817	56.87	-22.97	33.90	40.00	-6.10	peak
2	71.8320	47.30	-24.76	22.54	40.00	-17.46	peak
3	119.8556	47.57	-23.85	23.72	43.50	-19.78	peak
4	191.7450	49.84	-24.40	25.44	43.50	-18.06	peak
5	480.5276	39.25	-15.83	23.42	46.00	-22.58	peak
6 *	903.3093	81.70	-7.49	74.21	**94.00**	**-19.79**	**QP**

Emission Level= Read Level+ Correct Factor

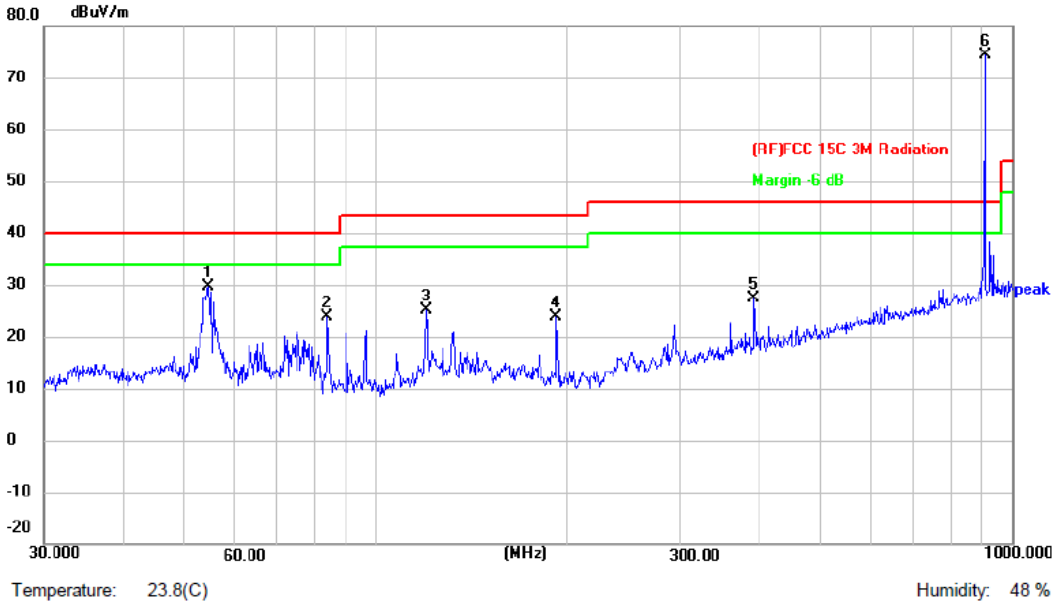
Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 902.25MHz		
Remark:	Only worse case is reported		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	54.2610	52.82	-23.00	29.82	40.00	-10.18	peak
2	71.8320	46.83	-24.76	22.07	40.00	-17.93	peak
3	191.7450	49.29	-24.40	24.89	43.50	-18.61	peak
4	392.0951	44.79	-18.18	26.61	46.00	-19.39	peak
5	570.6100	37.74	-13.56	24.18	46.00	-21.82	peak
6 *	903.3093	81.75	-7.49	74.26	**94.00**	**-19.74**	**QP**

Emission Level= Read Level+ Correct Factor

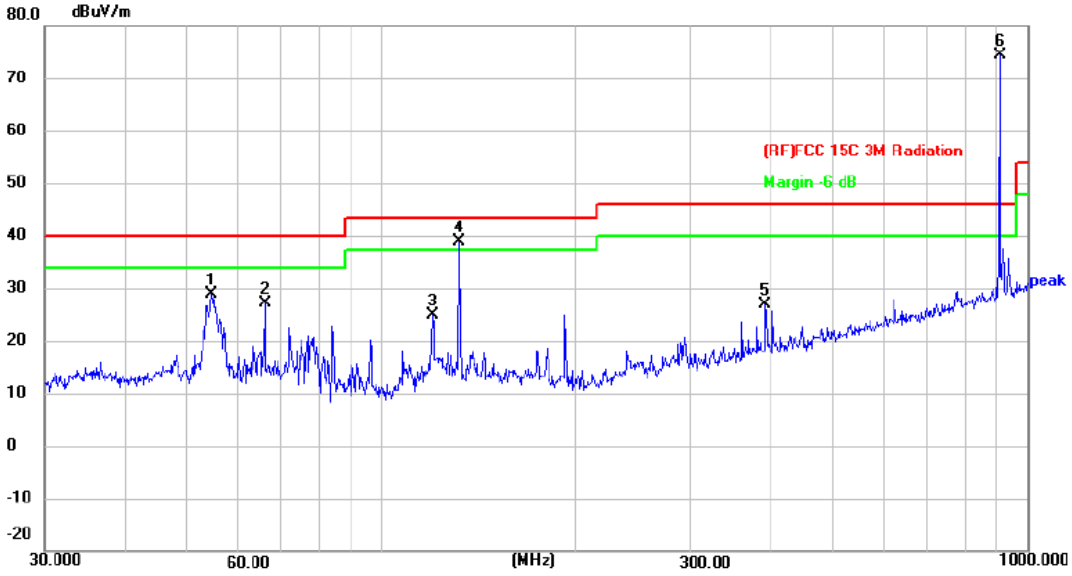
Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 905.25MHz		
Remark:	Only worse case is reported		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	54.4516	52.56	-23.01	29.55	40.00	-10.45	peak
2	83.8156	50.58	-26.68	23.90	40.00	-16.10	peak
3	119.8556	48.87	-23.85	25.02	43.50	-18.48	peak
4	191.7450	48.23	-24.40	23.83	43.50	-19.67	peak
5	392.0951	45.58	-18.18	27.40	46.00	-18.60	peak
6 *	906.4824	81.88	-7.44	74.44	**94.00**	**-19.56**	**QP**

Emission Level= Read Level+ Correct Factor

Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 905.25MHz		
Remark:	Only worse case is reported		

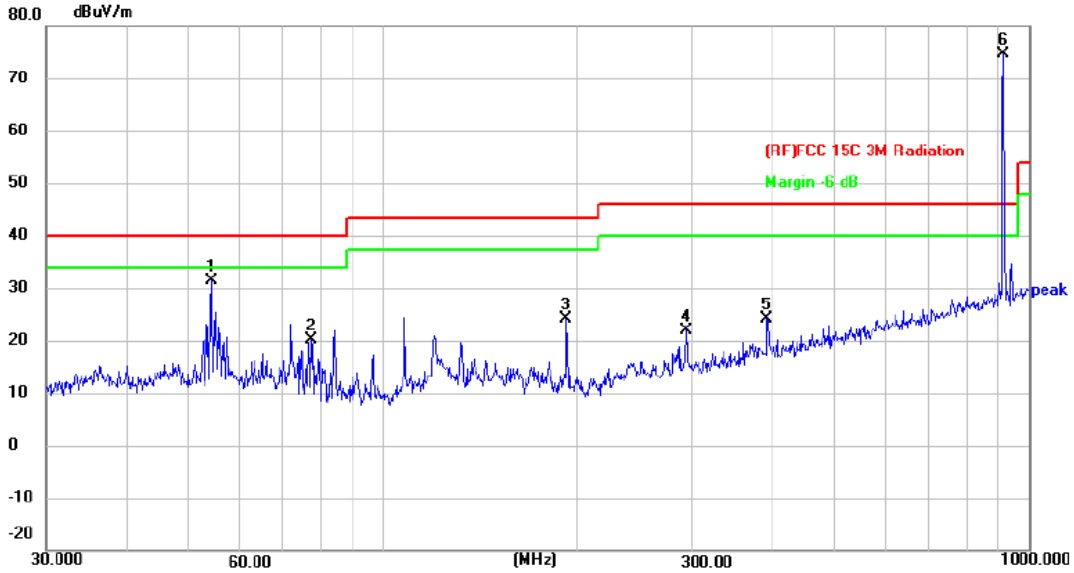


Temperature: 23.8(C) Humidity: 48 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	54.4516	51.85	-23.01	28.84	40.00	-11.16	peak
2	65.8031	51.15	-24.00	27.15	40.00	-12.85	peak
3	119.8556	48.63	-23.85	24.78	43.50	-18.72	peak
4 !	131.7577	62.04	-23.21	38.83	43.50	-4.67	peak
5	392.0951	45.06	-18.18	26.88	46.00	-19.12	peak
6 *	906.4824	81.77	-7.44	74.33	**94.00**	**-19.67**	**QP**

Emission Level= Read Level+ Correct Factor

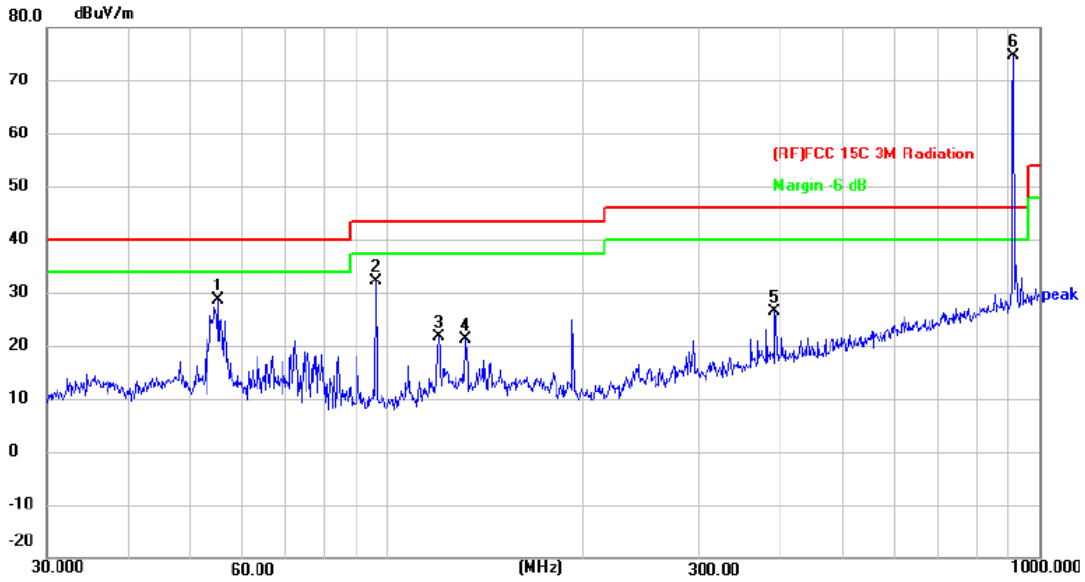
Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 909.25MHz		
Remark:	Only worse case is reported		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	54.0711	54.44	-22.99	31.45	40.00	-8.55	peak
2	77.3212	46.15	-26.09	20.06	40.00	-19.94	peak
3	191.7450	48.50	-24.40	24.10	43.50	-19.40	peak
4	294.1137	42.75	-20.89	21.86	46.00	-24.14	peak
5	392.0951	42.27	-18.18	24.09	46.00	-21.91	peak
6 *	912.8620	81.92	-7.34	74.58	**94.00**	**-19.42**	**QP**

Emission Level= Read Level+ Correct Factor

Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 909.25MHz		
Remark:	Only worse case is reported		



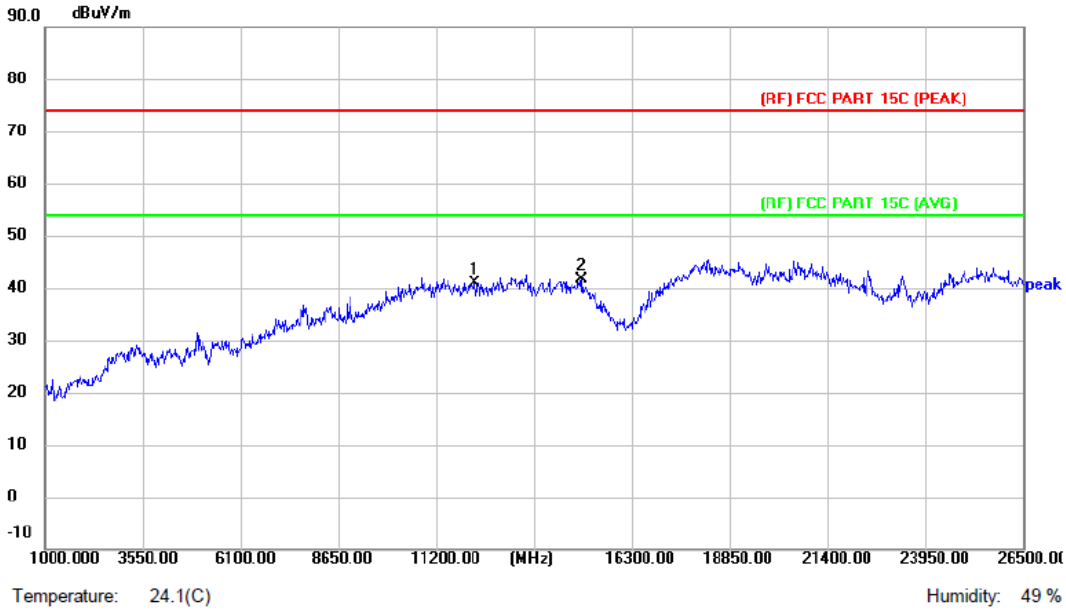
Temperature: 23.8(C) Humidity: 48 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	55.0274	51.77	-23.08	28.69	40.00	-11.31	peak
2	95.7622	58.14	-26.07	32.07	43.50	-11.43	peak
3	119.8556	45.50	-23.85	21.65	43.50	-21.85	peak
4	131.7577	44.23	-23.21	21.02	43.50	-22.48	peak
5	392.0951	44.46	-18.18	26.28	46.00	-19.72	peak
6 *	912.8620	81.94	-7.34	74.60	**94.00**	**-19.40**	**QP**

Emission Level= Read Level+ Correct Factor

Radiated Spurious Emission (Above 1 GHz)

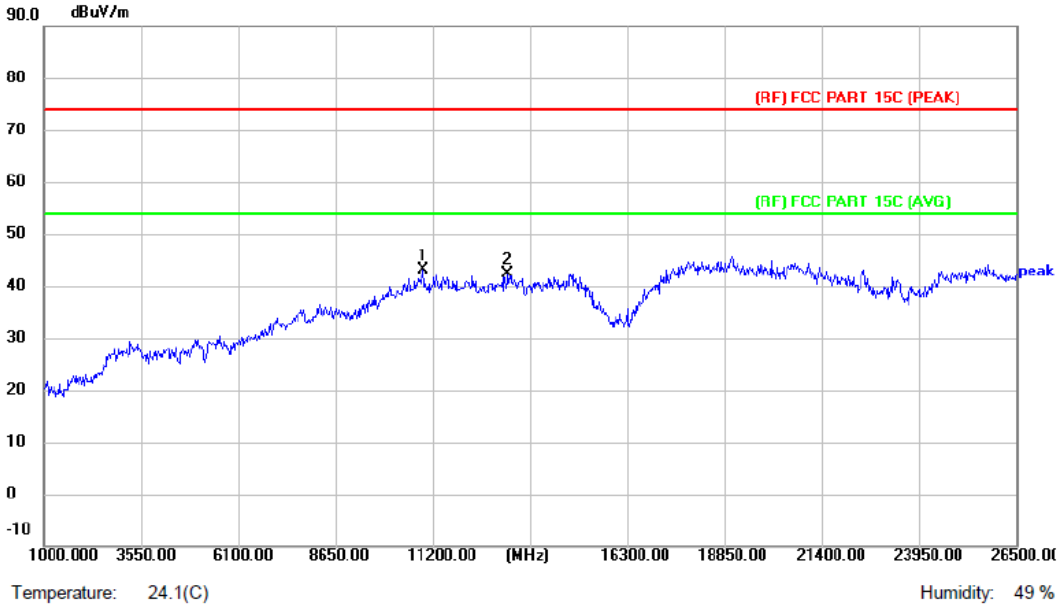
Temperature:	24.1℃	**Relative Humidity:**	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 902.25MHz		
Remark:	Only worse case is reported.		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	12194.500	41.61	-0.68	40.93	74.00	-33.07	peak
2 *	14999.500	40.23	1.47	41.70	74.00	-32.30	peak

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
5. No report for the emission which more than 20dB below the prescribed limit.
6. The peak value＜average limit, So only show the peak value.

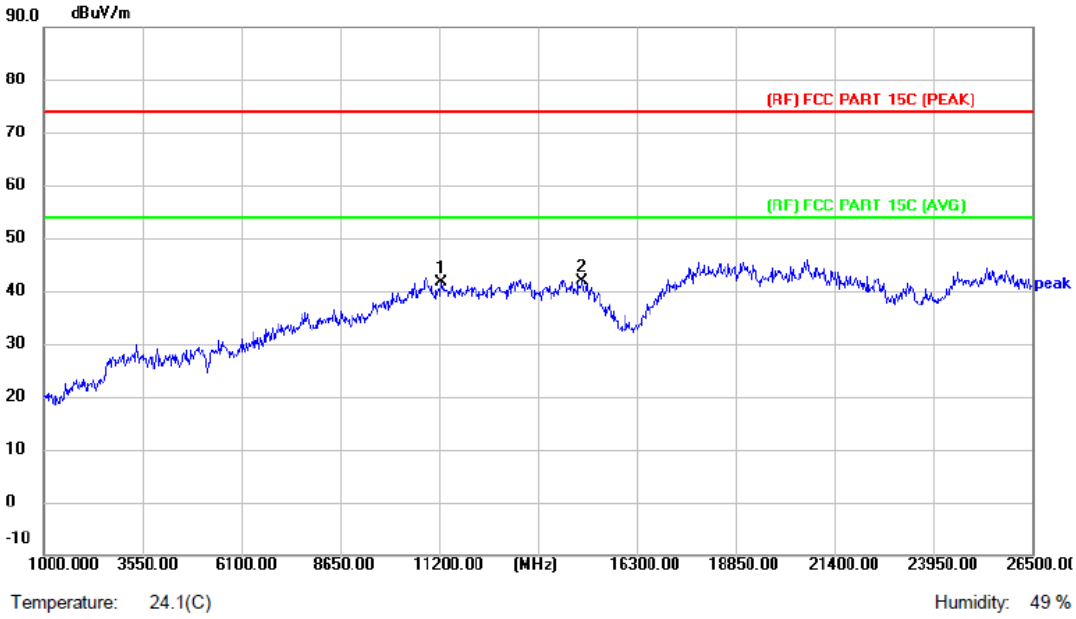
Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 902.25MHz		
Remark:	Only worse case is reported.		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	10945.000	44.83	-1.81	43.02	74.00	-30.98	peak
2	13163.500	42.39	-0.07	42.32	74.00	-31.68	peak

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
5. No report for the emission which more than 20dB below the prescribed limit.
6. The peak value＜average limit, So only show the peak value.

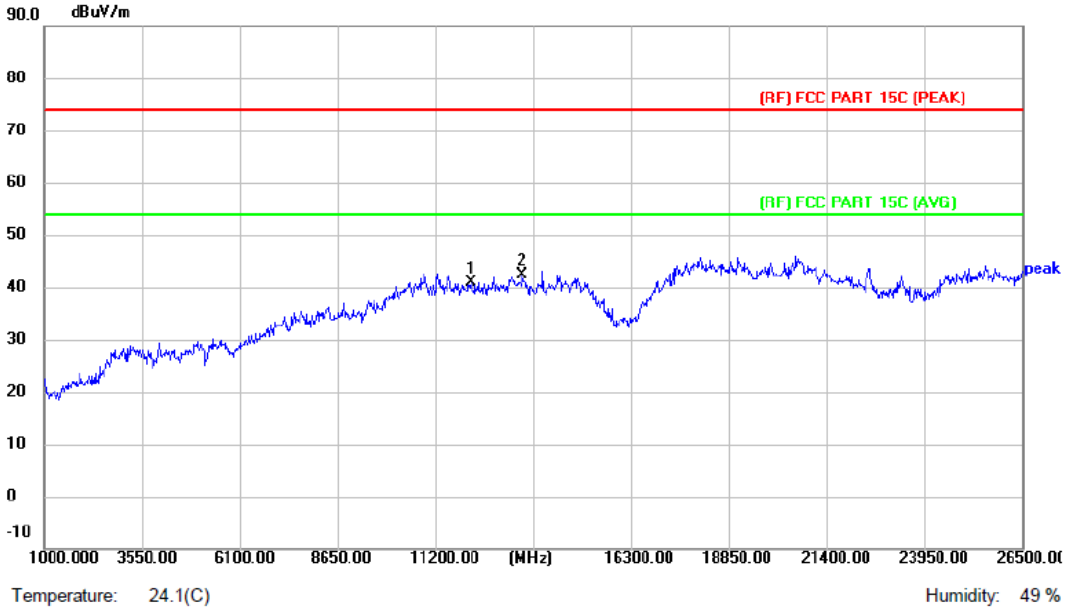
Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 905.25MHz		
Remark:	Only worse case is reported.		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	11251.000	43.28	-1.56	41.72	74.00	-32.28	peak
2 *	14897.500	40.54	1.41	41.95	74.00	-32.05	peak

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
5. No report for the emission which more than 20dB below the prescribed limit.
6. The peak value＜average limit, So only show the peak value.

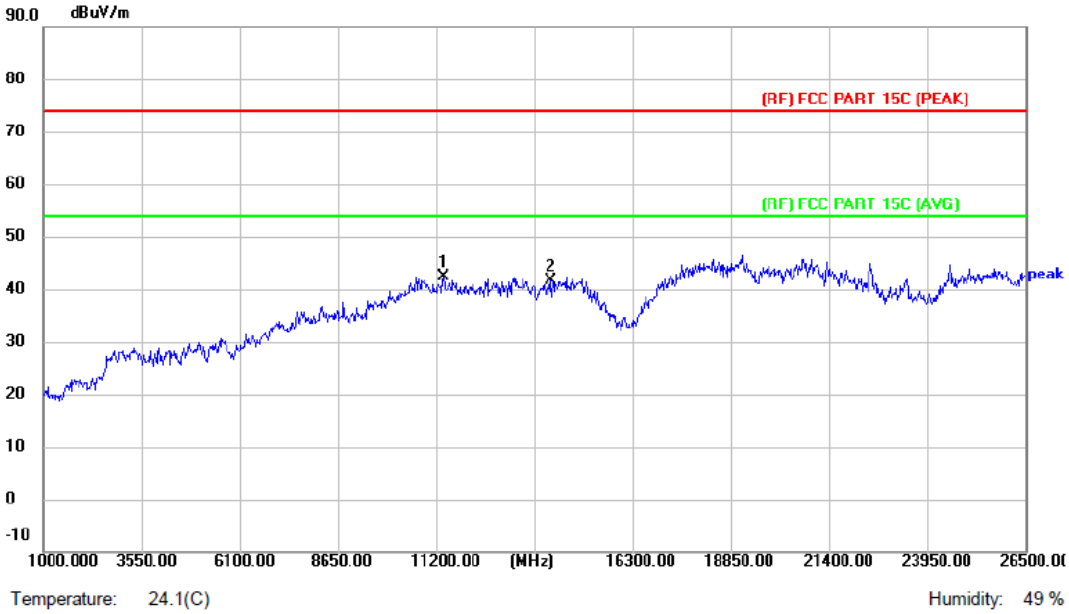
Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 905.25MHz		
Remark:	Only worse case is reported.		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	12118.000	41.35	-0.46	40.89	74.00	-33.11	peak
2 *	13469.500	42.37	0.10	42.47	74.00	-31.53	peak

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
5. No report for the emission which more than 20dB below the prescribed limit.
6. The peak value＜average limit, So only show the peak value.

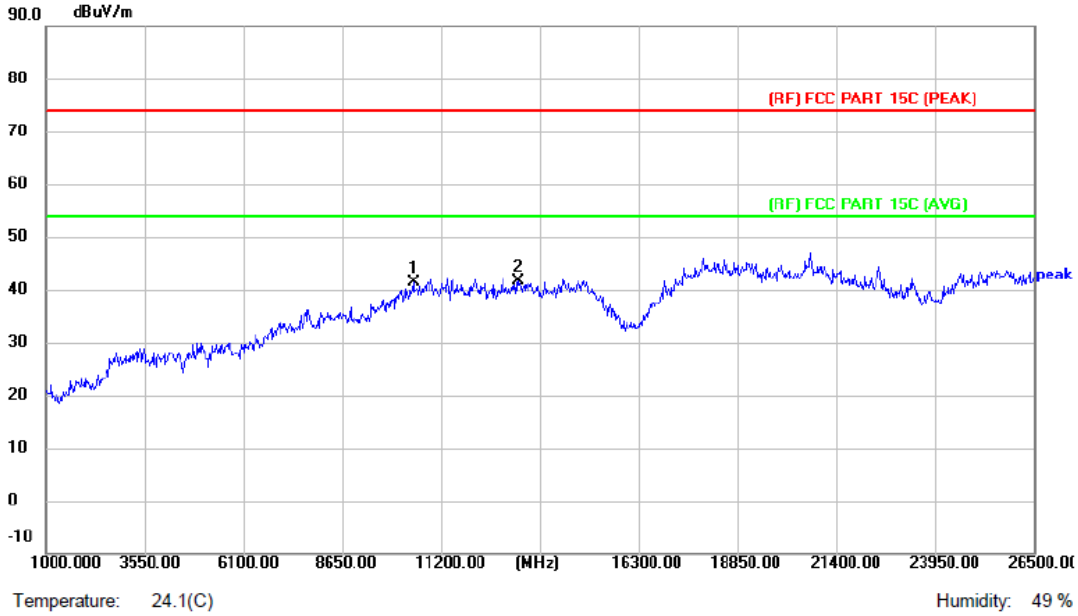
Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 909.25MHz		
Remark:	Only worse case is reported.		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	11378.500	43.27	-0.97	42.30	74.00	-31.70	peak
2	14158.000	41.61	-0.02	41.59	74.00	-32.41	peak

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
5. No report for the emission which more than 20dB below the prescribed limit.
6. The peak value＜average limit, So only show the peak value.

Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical		
Test Mode:	TX 909.25MHz		
Remark:	Only worse case is reported.		

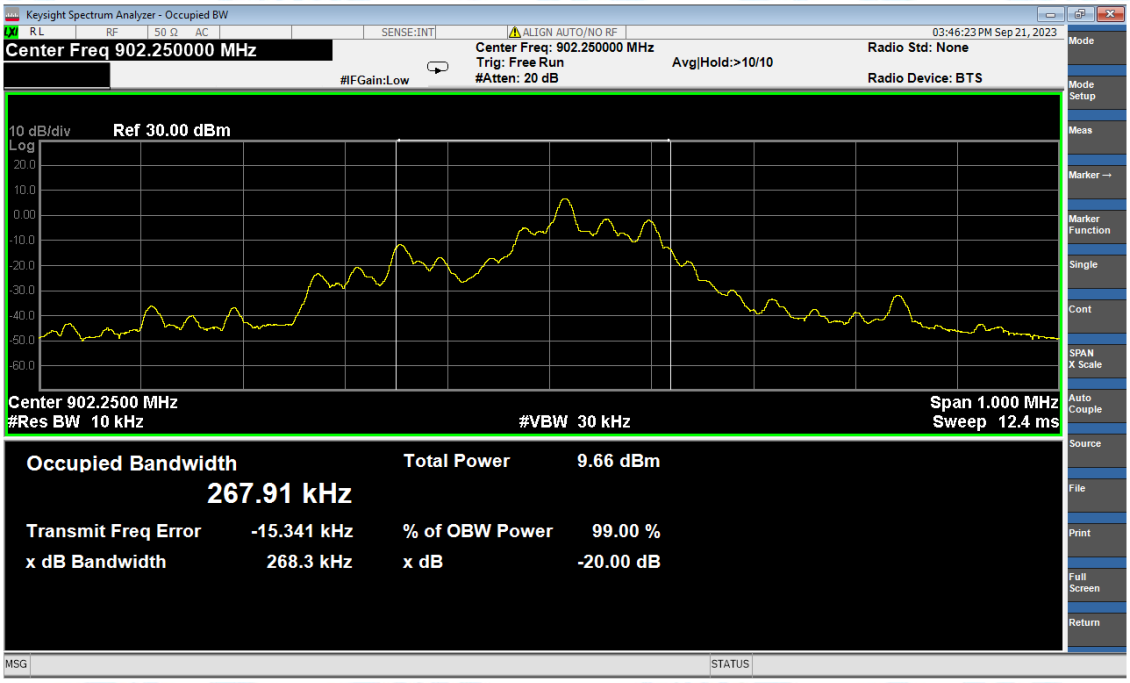


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	10486.000	45.05	-3.63	41.42	74.00	-32.58	peak
2 *	13189.000	41.82	-0.09	41.73	74.00	-32.27	peak

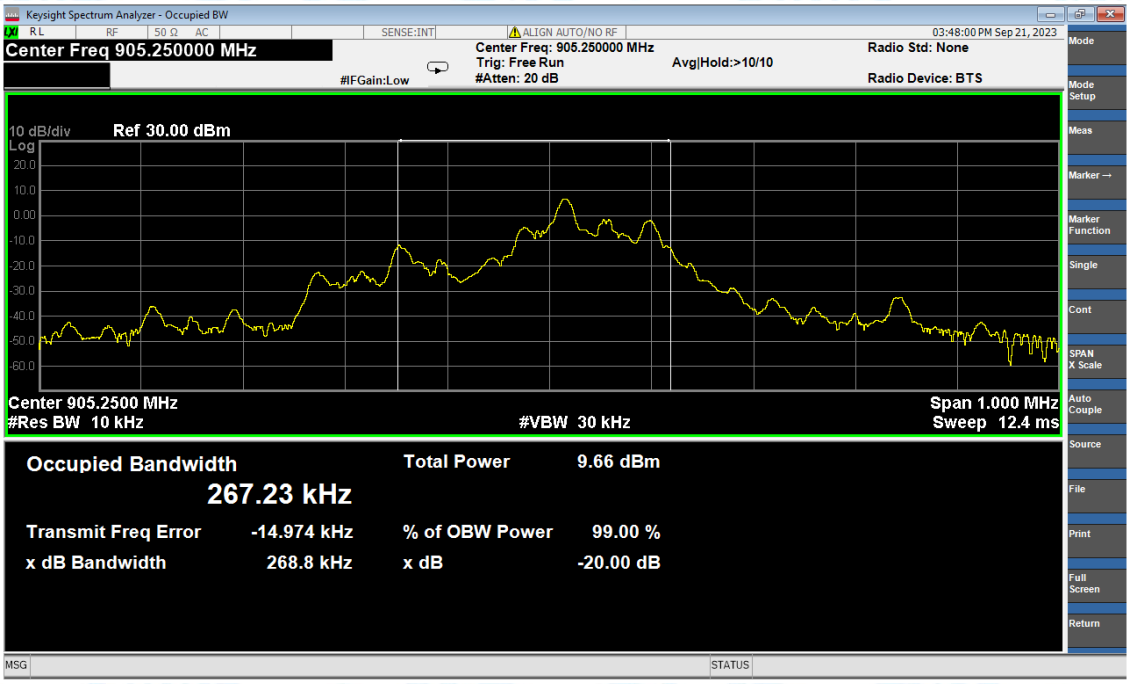
Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
5. No report for the emission which more than 20dB below the prescribed limit.
6. The peak value＜average limit, So only show the peak value.

Attachment C--Bandwidth Test Data

Channel Frequency (MHz)	20dB Bandwidth (kHz)
902.25	268.3



Channel Frequency (MHz)	20dB Bandwidth (kHz)
905.25	268.8



Channel Frequency (MHz)	20dB Bandwidth (kHz)
909.25	266.1

-----END OF THE REPORT-----